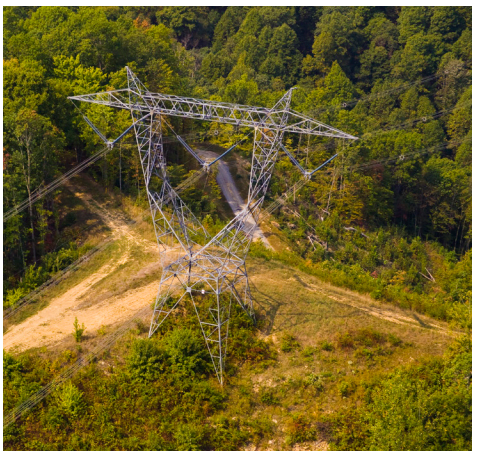
ENCROACHMENTS ON TRANSMISSION RIGHTS-OF-WAY

TRANSOURCE®



ENCROACHMENTS ON TRANSMISSION RIGHTS-OF-WAY

The purpose of this brochure is to inform property owners about "dos and don'ts" in and around electric line easements. Easements (also called rights-of-way) enable Transource to use another person's property to construct and maintain electric power transmission facilities, mainly lines and towers. Transource also needs access to its facilities to perform maintenance.

Landowners generally can continue to use their property in the right-of-way if the use is compatible with the purpose of the easement, in Transource's case, the transmission of electricity.

Incompatible uses in a right-of-way constitute encroachments; the subject of this publication.

> **Transource is very concerned about safety around its electric lines and urges landowners and others to exercise caution when under or near any overhead electric lines.**

Restrictions on how landowners can use their property within rights-of-way are designed to protect landowners from injury and electrical facilities from damage. Encroachments may be unsafe to the landowner and may impair the safe operation of Transource's electric transmission lines. That's why Transource patrols its rights-of-way and inspects its lines. Transource can require a landowner to remove an encroachment at the landowner's expense if the use is not compatible with the company's easement.

Most easements do not expire; they are perpetual in duration. As such, when property is sold and conveyed to another, the easements remain in effect and are binding on the new owner.

Please read on to learn more about the issue of encroachment and about permitted and prohibited uses in easements.

BUYER BEWARE

Buyers should inspect property before buying to determine whether an electric transmission line easement affects the property. While an easement can have a significant impact on the buyer's plans to use the property, in many cases an easement allows compatible uses.

EASEMENTS

Simply put, a landowner grants certain rights to use property to another person or entity through an easement. Webster's dictionary defines an easement as "a legal interest in real property that grants the right to use in some specified manner the property of another." Many landowners prefer to grant an easement, covering surface rights only, rather than an outright sale of land for right-of-way. With an easement the landowner may reserve the right to use the property for planting crops or pasturing animals in rural areas, for example. But the use must not be incompatible with the rights granted in the easement.

Most utility line easements today specify the location and width of the right-of-way. Some older easements were frequently "blanket easements" allowing a utility to cross property wherever it needed. Due to the many versions of easements over the years, it is important for landowners or prospective purchasers of land to review the terms of an easement. This review should provide guidance about permitted uses within the boundaries of a right-of-way easement. The National Electric Safety Code (NESC) specifies minimum horizontal and vertical clearance requirements for overhead lines. These clearance requirements must be complied with. Specific easement agreements may require more clearance.

The following chart lists typical right-of-way widths for various electric line voltages and locations.

VOLTAGE	URBAN TYPICAL WIDTH (FEET)	RURAL
34 kilovolts (kV)	50-100	100
46 kV	50-100	100
69 kV	50-100	100
115 kV	70-100	100
138 kV	70-100	100
161 kV	100-120	120
230 kV	120-150	150
345 kV	150	150
765 kV	200	200

Prior to closing the purchase of property, the buyer should determine whether an easement exists on the property. The buyer should inspect the property and ask the closing attorney or the seller about the presence of an easement. Sometimes, property title searches for lending institutions may to back only 30 to 40 years. The law in most states puts a buyer on notice if the electric transmission line can be seen during an inspection. Easements remain valid even if they are not shown in a title report. Transource maintains a database of recorded easements granted to its operating companies.

ENCROACHMENTS

Buildings, building extensions and additions (homes, businesses, garages, barns), swimming pools, above ground fuel tanks, tall signs or billboards, tall trees, obstructions and mounding of soil in the right-of-way are encroachments that are prohibited. Any road construction involving raising the natural grade and any topographic changes require Transource's review and approval in writing in advance.

If any such encroachment is found to be under construction, Transource will request immediate stoppage and removal of the encroachment. If installed, Transource will request removal of the encroachment. Most easements identify objects that are not allowed in the easement. Other easements state that objects that interfere with safe operation of a line are not permitted. Should a landowner refuse to cooperate, Transource will seek legal recourse to have the object removed.

VARIANCES

When a variance or consent to encroach is requested, Transource will review the pertinent easement as well as operational and code compliance requirements. Transource will respond to the landowner and present its findings in writing.

RIGHT-OF-WAY MAINTENANCE

Once an electric power line is installed on an easement, Transource must keep the line free from outages and interruptions due to contact from vegetation, trees or objects. Vegetation management methods include clear cutting or total removal of trees and vegetation, trimming and herbicide spraying, generally in rural areas. It is important to note that most easements enable Transource to cut trees and limbs outside the easement where trees or limbs may endanger Transources's lines.

USES IN RIGHTS-OF-WAY

Landowners should be aware of the following guidelines and issues.

- Transource must review and approve in writing changes in ground elevation in a right-of-way. Placement of fill dirt in the right-of-way reduces conductor-to-ground clearance. This is not allowed without prior Transource approval. (See contact information below.) An unapproved fill could require Transource to raise its electric lines at the landowner's expense.
- Roads or lanes generally are permitted to cross rights-of-way. While such crossing should be located close to a transmission structure, the actual location must be reviewed and approved by Transource. Proximity to a tower provides maximum vertical clearance between energized conductors and vehicles.
- No dirt or spoil shall be stored or deposited – even temporarily – on a right-of-way for any reason.
- Any excavation in the right-of-way must have a minimum 40-foot-radius buffer of undisturbed soil around all transmission structures, including guy wires and anchors, for 345 kV and above lines. A 30-foot-radius buffer is required for 34 -161 kV lines. Transource must approve any excavation that affects its access to a transmission structure.
- Transource must approve all electric, gas, telephone, cable TV, water, sewer and other lines in the right-of-way. These lines must be placed at least 40 feet from all structures, and overhead clearances must be maintained.
- No pond, lake or other water detention area is allowed to cover the entire width of an electric transmission line right-of-way. A minimum corridor width of 30 feet must be available for large utility vehicles to drive the length of the right-of-way without restriction for maintenance purposes.
- Light standards or poles in the right-of-way must be approved in advance by Transource to maintain proper clearance.
- Erosion problems from landowner actions are the landowner's responsibility. If a problem threatens the integrity of Transource's power lines, the landowner should notify Transource immediately and take corrective action.
- No temporary or permanent structures, buildings, in-ground or above ground pools, playground equipment or other fixed im provements should be erected in the right-of-way.
- Ingress and egress (right of passage in and out of property) to Transource lines are critical. Therefore, any fences along the entire width of a right-of-way should have a 14-foot-wide gate with a Transource lock in the locking chain.
- All fences with metal components should be grounded to prevent nuisance shocks.
- Row crops – corn, wheat, cotton, soybeans, for example – are permitted in rural right-of-way, but not tree farms. Keep in mind that line trucks traveling along a right-of-way can damage crops. Compensation terms for crop damage from maintenance work are covered in the easement.
- In urban areas, many easements are used for lawns, gardens and recreational areas. These are acceptable as long as they do not endanger the safe operation of the line. Parking lots are usually acceptable under lines up to 161 kV. Higher voltage lines could produce induced voltage shocks that may be uncomfortable to some users. Landowners should contact Transource regarding parking vehicles under or near 230 kV to 765 kV lines. Planting trees, especially taller-growing and/or nut-bearing varieties, is not permitted in an easement. Low-growing fruit trees or shrubs are generally acceptable.Contact Transource at the number listed below with questions.Transource reserves the right to trim or removed trees at its discretion.

ELECTRIC FIELDS AND NUISANCE SHOCKS

An electric field or e-field contains invisible lines of force produced by electric voltage. An e-field surrounds any wire or conductor that has voltage placed upon it. When energized, power lines, electrical wiring, appliances, TV sets, hair dryers, computers and other electrical devices produce e-fields. An e-field is a natural force that cannot be eliminated or confined. Its strength varies with distance from the conductor. E-field strength is stronger near its source and decreases with distance from the conductor.
E-fields cause induced-voltage nuisance shocks when a person touches an ungrounded metal object or other conductor, such as a vehicle parked on or slightly off the right-of-way. A nuisance shock will not harm the recipient but could be startling.

The prospect of such shocks is influenced by many factors, including:
- line voltage
- conductor ground clearance (vertical distance) and horizontal distance
- type of material (conducting or non-conducting)
- type of soil (resistance to electrical charge)
- location and size of vehicle or object
- atmospheric conditions and personal physiology
- insulating capability of one's shoes

LOCATION MATTERS

The location of a vehicle or object within a right-of-way is the primary factor in nuisance shocks. Typically, nuisance shocks occur with vehicles parked in or next to the right-of-way of a 345 kV (or larger) line. Larger conductive objects (tall or long trucks, for example) are more likely to build up a greater charge. Thus, they may deliver a potentially annoying shock when a person's body provides a path to ground for electric current. In some cases backyard metallic objects such as swings, portable grills and parked lawnmowers can deliver shocks if located in or close to an extra high voltage line's right-of-way. Contact with an ungrounded metal fence can also deliver a shock. Someone cleaning gutters on a structure near the edge of a high voltage line can get a shock.
Predicting the likelihood of nuisance shocks is impossible. As mentioned, e-field strength is determined by distance from the source. Institute of Electrical and Electronics Engineers (IEEE) guidelines and calculated e-field magnitudes were used to create the table below – Likelihood of Shock Occurring with Vehicles Parked in the Right-of-Way. This table contains general information and is intended for general public education about e-fields and the potential for nuisance shocks. It was prepared to show the types transmission lines with vehicles parked in the right-of-way that could produce nuisance shocks.

LIKELIHOOD OF SHOCK OCCURING

VOLTAGE (KV)	STRUCTURE TYPE	VEHICLE DESCRIPTION ID						
		1	2	3	4	5	6	7
34-46	All	N	N	N	N	N	N	N
69	H-Frame	N	N	N	N	N	N	N
69	Single Pole Horizontal Post Insulator	N	N	N	N	N	N	N
138	H-Frame	P	P	N	P	N	N	N
138	Single Pole Horizontal Post Insulator	N	N	N	N	N	N	N
138	Single Pole Davit Arm Suspension	N	N	N	N	N	N	N
345	Single Circuit Lattice Tower	Y	Y	N	Y	Y	P	P
345	Single Pole Structure	Y	Y	N	Y	Y	N	N
345	Double Circuit Lattice	Y	Y	N	Y	N	N	N
765	Guyed V Tower (Existing)	Y	Y	P	Y	Y	Y	Y
765	Guyed V Tower (New)	Y	Y	Y	Y	Y	Y	Y
765	Lattice Tower	Y	Y	Y	Y	Y	Y	Y

ID	VEHICLE DESCRIPTION
1	Large Tractor Trailer (52’ long)
2	Large School Bus (34’ long)
3	Small Farm Tractor
4	John Deere Combine
5	Full-Size Van (20’ long)
6	Pickup Truck
7	Automobile

CONTACTING TRANSOURCE

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